



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/788,316	02/16/2001	E. Neil Lewis	S0001-009002	7045

7590 03/05/2003  
Kristofer E. Elbing  
187 Pelham Island Road  
Wayland, MA 01778

EXAMINER

LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
----------	--------------

2872

DATE MAILED: 03/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/788,316

Applicant(s)

LEWIS ET AL.

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 39 and 59-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-38 and 40-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Invention I, Claims 1-38, 40-58, in Paper No. 6, dated 1/21/03, is acknowledged.
2. Claims 39, 59-63 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6, dated 1/21/03.

### *Oath/Declaration*

3. ✓ The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The application to which the oath or declaration is directed has not been adequately identified. See MPEP § 601.01(a). Specifically, the title of the application is improperly identified.

It does not identify the mailing or post office address and residence address of each inventor. A mailing or post office address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing or post office address should include the ZIP Code designation. The mailing or post office address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76. In particular, the oath or declaration fails to provide the city and state of the residence address and fails to provide the street address of the mailing or post office address.

***Specification***

4. The disclosure is objected to because of the following informalities:

- ✓ Page 1, line 6- insert 'now U.S. Patent No. 6,483,112,' after 'July 14, 1999,'
- ✓ Page 2, line 10- 'having and' should read 'and'
- ✓ Page 3, line 2- delete 'lumens' after 'millilumens'
- ✓ Page 4, line 14- after 'energies.', 'The' should read 'They'
- ✓ Page 5, line 24- delete 'a' after 'in'
- ✓ Page 6, line 3- delete 'a' after 'require'
- ✓ Page 7, line 7- after 'of', 'Fig. 5;' should read 'Fig. 1;'
- ✓ Page 7, line 15; Page 9, line 6- '18' should read '18A, 18B'
- ✓ Page 7, line 23- delete 'the' after 'between'
- ✓ Page 8, lines 23 and 24- 'sepectrometric' should read 'spectrometric'
- ✓ Page 11, line 10- 'Referring' should read 'referring'
- ✓ Page 12, line 22- 'off-the shelf' should read 'off-the-shelf'

Appropriate correction is required.

5. The attempt to incorporate subject matter into this application by reference to U.S.

Application No. 09/345672 is improper because this application has been abandoned and has not been previously published or made publicly available.

***Claim Objections***

6. Claims 1-40 are objected to because of the following informalities:

Art Unit: 2872

✓ Claim 3, line 2- 'having and' should read 'and'. Claim 4 is dependent on Claim 3, and hence inherits the deficiencies of Claim 3.

✓ Claim 1 recites the limitation "the sample" in lines 6-7. There is insufficient antecedent basis for this limitation in the claim. It is suggested that "a sample" be used instead.

Claims 2-40 depend on Claim 1, and hence inherit the deficiencies of Claim 1.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-2, 5-8, 28, 30-31, 41-42, 44-45, 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Fateley et al (U.S. Patent No. 5257086, or '086).

With regard to Claims 1, 28, 41-42, and 58, Fateley et al. ('086) discloses a spectrometer (See Figures 1 and 2) comprising an array of illumination sources (See 12 in Figure 2; Figure 3) positioned to illuminate a detection area (See 89 in Figure 2) with a plurality of beams of light; a detector (See 18 in Figure 1) responsive to the detection area; and a spectroscopic signal output responsive to relative amounts of light from the beams in different spectral regions received by the detector after interaction with a sample in the detection area (See col. 3, line 4-col. 6, line 12).

With regard to Claim 2, 5-8,44-45, Fateley et al. ('086) discloses a switching array having a plurality of switched outputs that are each operatively connected to an input of at least one of the illumination sources (See 20 in Figure 1; 108, 110 in Figure 2). The switching array is operative to define an intensity level (such as on and off) for one or more of the sources by determining an illumination time period for the one of the sources relative to an illumination time period for another of the sources. Fateley et al. ('086) additionally discloses sequencing logic operative to cause the switching array to switch the sources in a Hadamard sequence. See col. 4, lines 7-30; col. 5, lines 11-55.

With regard to Claims 30-31, Fateley et al. ('086) discloses the illumination sources being positioned to illuminate different sub-areas of the detection area and a first portion of the beams overlapping within the sample area (See Figure 1). The Examiner notes that each source in 12 of Figure 1 will illuminate a different portion of the detection area in 116, and additionally, each source is shown as having optical outputs that are partially diverging (See for example 118, 120) such that the beams will overlap in the detection area in 116.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2872

10. Claims 14-27, 29, 34-36, 40, 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fateley et al. ('086).

Fateley et al. ('086) discloses the invention as set forth above, except for the sources being, for example, broadband infrared sources, incandescent sources, narrow-band infrared sources, a mix of these, or all of a particular type. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the sources be one of broadband infrared sources, incandescent sources, or narrow-band infrared sources, since one skilled in the art would know to choose the appropriate light illumination sources based on requirements of wavelength, output power, and design considerations, such as cost, size and weight. Additionally, Fateley et al. ('086) discloses the invention as set forth above, except for the spectrometer being either a microscopic or macroscopic instrument producing luminous flux of at most 10 millilumens to 1 lumen, the sources being placed within 1 cm of the detection area, and sources having supply voltages of less than 5-12 volts, the sources being connected to a single power supply, or providing a circular support for the detector array. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the spectrometer be either a microscopic or macroscopic instrument producing luminous flux of at most 10 millilumens to 1 lumen, the sources be placed within 1 cm of the detection area, the sources have supply voltages of less than 5-12 volts, and the sources being connected to a single power supply, since one skilled in the art would have known to 1) design the size of the instrument appropriately based on optical performance and cost, 2) design the optical portion of the instrument to provide the appropriate amount of light

Art Unit: 2872

onto the sample at the detection area, 3) adjust the mechanical layout of the instrument such that the sources are within 1 cm of the detection area and the detector array is mounted onto a circular support, and 4) design the electrical portion of the instrument to supply the voltages and currents required to operate the sources using one or more power supplies, all these based on optical performance, cost, and intended use of the instrument.

11. Claims 3-4, 9-10, 32-33, 38, 43, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fateley et al. ('086) in view of Malin et al. (U.S. Patent No. 6236047).

With regard to Claims 3-4, 9-10, 43, 46, Fateley et al. ('086) discloses the invention as set forth above, except for at least a first spectrally selective element and at least a second spectrally selective element, the first having a different spectral response than the second, both being located in the optical path between one of the illumination sources and the detector. However, Malin et al. teaches an apparatus for determining the concentration of an analyte present in a sample (See Figures 1A, 1B) utilizing a source, such as a diode array (See 12 in Figures 1A, 1B; col. 9, lines 21-39), wherein multiple spectrally selective filters (See for example 20, 22, 24 in Figure 1A; 58 in Figure 2A; 58' in Figure 2B) having different spectral responses, such as those corresponding to different absorption bands of a predetermined substance (See col. 10, line 1-48; col. 11, line 59-65; col. 13, lines 1-55), are located in the optical path between the source and detector. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include at least a first spectrally selective element and at least a second spectrally selective element, the first having a different spectral response than the second, both being located in the optical path between one of the illumination sources and the



detector, as taught by Malin et al., in the spectrometer of Fateley et al. ('086). One would have been motivated to do this to improve the signal-to-noise ratio of the system, as well as reduce instrumentation noise.

With regard to Claim 32, Fateley et al. ('086) discloses the invention as set forth above, except for the detector being located to receive beams from the illumination sources after they are reflected off of the sample. However, Malin et al. discloses such a reflection-type spectroscopic arrangement (See for example sample 16, detector 26, source 12 in Figure 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the detector be located to receive beams from the illumination sources after they are reflected off of the sample, as taught by Malin et al., in the spectrometer of Fateley et al. ('086) for the purpose of performing spectroscopic measurements on opaque or non-transparent samples.

With regard to Claims 33 and 38, Fateley et al. ('086) discloses the invention as set forth above, except for the detector including a plurality of detector elements, such as a linear detector array, wherein the detection area is divided into a plurality of detection sub-areas, and wherein each of the detector elements is aligned with one of the detection sub-areas. However, Malin et al. teaches an apparatus for determining the concentration of an analyte present in a sample (See Figures 1A, 1B) as set forth above. In particular, Malin et al. teaches using an array of detector (See 18B in Figure 1B; 60 in Figure 2A, 2B). Additionally, it is well-known in the art of optical spectroscopy to divide the detection area/sample into small regions which are aligned with detector array elements designed to detect emission only from those regions, i.e. spatial or hyperspectral imagery.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the detector include a plurality of detector elements, such as a linear detector array, wherein the detection area is divided into a plurality of detection sub-areas, and wherein each of the detector elements is aligned with one of the detection sub-areas, as taught by Malin et al., in the spectrometer of Fateley et al. ('086) for the purpose of providing spectroscopic measurement information based on location on the sample.

12. Claims 11-13, 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fateley et al. ('086) in view of Malin et al. as applied to Claims 1-4 above, and further in view of Bengtsson (U.S. Patent No. 6078390).

Fateley et al. ('086) in view of Malin et al. discloses the invention as set forth above, except for the selective elements being parabolic or ellipsoidal reflectors. However, Bengtsson teaches the use of reflective selective elements, such as dichroic beam splitters and wavelength-specific mirrors (See 22, 24 in Figure 1) in spectroscopic apparatus for identifying chemical species from fluorescence. Additionally, the shape of the reflectors, whether planar, parabolic, ellipsoidal, or other non-standard shapes, is dictated by the optical design of the spectroscopic apparatus, and is well within the skill of worker in the art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the selective elements be parabolic or ellipsoidal reflectors, as taught by Bengtsson, in the spectrometer of Fateley et al. ('086) in view of Malin et al. for the purpose of improving the signal-to-noise ratio of the system, as well as reducing instrumentation noise.

Art Unit: 2872

13. Claims 37, 50-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fateley et al. in view of Miller et al. (U.S. Patent No. 6373568).

Fateley et al. ('086) discloses the invention as set forth above, except for a spectral matching module responsive to the spectroscopic signal output and operative to perform spectral matching operations with one or more known substances or samples, such as pharmaceuticals, pathological, or biological samples. It is well-known in the art of optical spectroscopy to compare reference optical spectra to reference optical spectra for the purpose of identification. Additionally, Miller et al. teaches a spectral imaging system (See for example Figure 4a) utilizing a plurality of sources (See 1 in Figure 4a; 10a-j in Figure 1) wherein a computer and program (See 63, 64 in Figure 4a) are used to perform weighting function calculations on spectral information such that further collected spectral data can be compared with this information to identify the samples (See Abstract; col. 4, lines 14-27; col. 9, line 11-col. 10, line 34). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a spectral matching module responsive to the spectroscopic signal output and operative to perform spectral matching operations with one or more known substances or samples, such as pharmaceuticals, pathological, or biological samples, as taught by Miller et al., in the spectrometer of Fateley et al. ('086) for the purpose of providing automated, highly accurate means of sample identification.

Art Unit: 2872

*Conclusion*

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5488474 ('474) to Fateley et al.

Fateley et al. ('474) is being cited to evidence a spectroscopic apparatus which is very similar to that disclosed by Fateley et al. ('086).

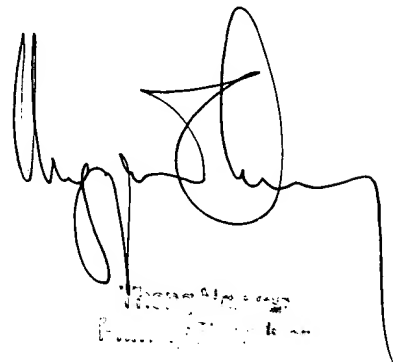
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias  
February 27, 2003



Arnel C. Lavarias  
February 27, 2003